<u>What is claimed is:</u>

1. A microelement device comprising
   - a substrate;
   - a plurality of electrical microelements arranged on said substrate adapted for electrically contacting biological cells present in a liquid environment;
   - means selected from the group consisting of means for guiding said cells toward said microelements, means for mechanically attracting said cells toward said microelements, and means for isolating the cells.

2. The device as defined in claim 1, wherein said microelements are configured for sensing bioelectrical potentials.

3. The device as defined in claim 1, wherein said microelements are configured for bioelectrical stimulation of said cells.

4. The device as defined in claim 1, wherein said microelements are configured as light-sensitive elements.

5. The device as defined in claim 1, wherein said means for attracting are configured for exerting a negative-pressure force on the cells.

6. The device as defined in claim 1, wherein said means for attracting are configured for exerting a hydrodynamic force on the cells.

7. The device as defined in claim 5, wherein said means for attracting comprise channels which open out at a contact surface of said microelectrodes.

8. The device as defined in claim 6, wherein said means for attracting comprise channels which open out at a contact surface of said microelectrodes.

9. The device as defined in claim 6, wherein the channels are connected to a source of negative pressure.

10. The device as defined in claim 6, wherein said channels are connected to a pump means for said liquid environment.

11. The device as defined in claim 10, wherein said pump means is configured as an electroosmosis pump.

12. The device as defined in claim 11, wherein said electroosmosis pump comprises two electrodes being arranged at opposite ends of said channels, a voltage being applied between the electrodes.

13. The device as defined in claim 12, wherein the means exert an electrostatic force on the cells.

14. The device as defined in claim 1, wherein said means for guiding comprise funnel-like microcuvettes being arranged in the substrate and having a bottom, said microelements being located at the bottom of said microcuvettes.

15. The device as defined in claim 14, further comprising surface regions between said microcuvettes, said regions being coated with a cell-repelling substrate.

16. The device as defined in claim 14, wherein said microcuvettes are coated with a cell-attracting substrate.

17. The device as defined in claim 1, wherein said substrate comprises at least a base plate and a cover plate located thereabove.

18. The device as defined in claim 17, wherein the base plate is made of a material selected from the group consisting of glass, quartz, silicon, or plastic.

19. The device as defined in claim 17, wherein the cover plate is made of a material selected from the group consisting of glass, quartz, silicon, plastic, polystyrene, PMMA, and polyimide.

20. The device as defined in claim 17, wherein at least one element selected from the group consisting of the base plate and the cover plate is made of a material that is transparent to light, the wavelength of the light lying

in a region of the spectrum accessible to microscopy techniques.

21. The device as defined in claim 17, wherein the base plate is connected to the microelements and comprises an edge connector which id guided outward laterally.

22. The device as defined in 17, wherein the base plate comprises at least a lower signal processing plate and an element plate located thereabove.

23. The device as defined in claim 22, wherein the signal processing plate is guided outward laterally as an edge connector.

24. The device as defined in claim 2, wherein the microelectrodes comprise sensing electrodes and stimulus electrodes electrodes.

25. The device as defined in claim 2, wherein the microelectrodes comprise reference electrodes.

26. The device as defined in claim 25, wherein the microelectrodes comprise multiple concentrically arranged individual electrodes.

27. The device as defined in claims 14, wherein the microelectrodes comprise at least one reference electrode and at least one sensing electrode, wherein said sensing electrode is arranged at the bottom of said mi-

crocuvette, and wherein said reference electrode is arranged at a distance above said sensing electrode.

28. The device as defined in claim 2, wherein the microelectrode comprises a surface being in contact with the environment and a surface being in contact with the cell, said surface being in contact with the environment being larger than the surface being in contact with the cell.

29. The device as defined in claim 28, wherein the microelectrode is configured as a chamber in a substrate, the chamber communicating through an opening with an external space surrounding the substrate.

30. A method for making contact to cells present in a liquid environment above a substrate, said method comprising the steps of:
- creating electrical microelements;
- creating a contact between said cells and said microelements; and
- creating a force for guiding the cells.

31. The method as defined in claim 30, wherein said force for guiding the cells is a force attracting the cells toward said microelements.

32. The method as defined in claim 30, wherein said force is exerted as a negative-pressure force.

33. The method as defined in claim 30, wherein the force is exerted as a hydrodynamic force.

34. The method as defined in claim 33, wherein the hydrodynamic force is exerted by electroosmosis, in particular by way of an electrolyte flow generated by electroosmosis.

35. The method as defined in claim 30, wherein the force is exerted as an attractive force on the basis of electrical charging of the cells and an electric field acting in the direction of the electrodes.

36. The method as defined in claim 30, wherein the attractive force is exerted as a contact force between said cells and said microelements.

37. The method as defined in claim 30, wherein the force is exerted for a directed movement of the cells toward the microelements.

38. The method as defined in claim 30, wherein the cells are stimulated via microelements configured as microelectrodes.

39. The method as defined in claim 30, which further comprises the step of sensing potentials of the cells via the microelements which are configured as microelectrodes.

40. The method as defined in claim 39, which further comprises the step of sensing the luminescence of the cells via the microelements which are configured as microphotodiodes.

41. The method as defined in claim 39, which further comprises the step of measuring the light absorption of the cells via the microelements which are configured as microphotodiodes.

42. A method for manufacturing a microelement device having a plurality of electrical microelements which are arranged on a substrate, said method comprising the steps of:
- providing a base plate; and
- providing a cover plate located thereabove.

43. The method as defined in claim 42, which further comprises the steps of:
- providing a channel system within said base plate;
- shaping microcuvettes within the cover plate, said microcuvettes having openings at a bottom thereof;
- fitting the base plate to the cover plate in such a way that the openings at the bottom of the microcuvettes adjoin contact surfaces of the microelements and communicate with the channel system.

44. The method as defined in claim 42, which further comprises the steps of:

(a) providing at least one of the base plate and the cover plate, on their surfaces facing one another, with a layer of molecules having a reactive terminal group;

(b) fitting the base plate and cover plate together; and

(c) forming a covalent bond between the layers by external stimulation.

45. The method as defined in claim 44, wherein the base plate and the cover plate are adjusted relative to one another after performing step (b).

46. The method as defined in claim 45, wherein the base plate and the cover plate are heated, are subjected to light or an electric field is applied.

47. The method as defined in claim 43, wherein the base plate and the cover plate are joined to one another by anodic or metallic bonding.